

54
B27
1

1. A medical instrument comprising at least one memory metal tube programmed for memory effect or superelasticity and having in at least one section thereof a plurality of slots such that the slotted section is capable of expansion and contraction.

2. The instrument of claim 1 further comprising a delivery tube that surrounds at least the slotted section of the memory metal tube during delivery and which is partially removed from surrounding the slotted section of the memory metal tube by a relative longitudinal movement between the respective tubes.

C2

3. The instrument of claim 2 being a retrieval basket for retrieving particles to be removed from the human body.

4. The instrument of claim 2 being a dilator to enlarge the diameter of collapsed or obstructed ducts, veins, arteries or other cavities in the human body.

5. The instrument of claim 2 being a reaming tool to cut parts off the wall of a cavity by rotational movement around the longitudinal axis of the instrument.

6. The instrument of claim 2 being an expansion tool that is expandable at a distal end to enlarge a body cavity.

09156276-091798

57
1337

7. The instrument of claim 2 wherein the slots in the memory metal tube extend to the distal end of the tube and have been programmed to change into bending hooks upon delivery from the delivery tube.

8. The device of claim 7 wherein the bending hooks close during retraction into the delivery tube to provide an internal gripping function.

105+retract
9. The device of claim 7 wherein the bending hooks curl outside during advance from the delivery tube to provide an external gripping function.

10. The device of claim 9 wherein the hooks curl outside sufficiently to engage the outer wall of the memory metal tube to form closed loops.

11. The instrument of claim 2 wherein said memory metal tube has an expandable section that is substantially filled by an elastically deformable polymer, which upon expansion in a tubular cavity plugs the cavity.

12. The instrument of claim 11 wherein a wire, eyelet or hook is connected to the proximal end of the device to facilitate removal of the device.

13. The instrument of claim 11 wherein the elastically deformable polymer is of the UV-curing type which enables the material to be cured by exposure to light emitted from an optical fiber.

09156276.091798

14. The instrument of claim 2 having an expandable section that surrounds or is surrounded by an elastic material in the shape of a balloon connected at its proximal end and distal ends with one-way valves that only open in a distal direction such that intermittent relative axial movement of the delivery tube compared to the memory metal tube causes a pumping action in the distal direction.

15. The instrument of claim 2 further comprising optical measuring means.

16. The instrument of claim 2 further comprising a second delivery tube within the memory metal tube, and a steerable superelastic wire with a curved tip within said second delivery tube.

17. The instrument of claim 16 wherein said steerable wire is programmed to meet the wall of a cavity within which the instrument is placed to measure the radius of the cavity.

18. The instrument of claim 17 wherein the steerable wire is hollow and contains an optical system to provide visual information about the condition and size of the cavity.

19. The instrument of claim 18 wherein the steerable wire is hollow and contains a laser system as the optical system to work with at the distal end.

09156276.091798

20. The instrument of claim 1 wherein the pattern of slots is provided such that heating at least one of the wall segments defined by the slot provides a contraction, expansion or bending of that segment which causes an angular deviation of the axis of top portion of the distal tip of the memory metal tube.

09156276-091798